PATENT

Attorney Docket No.: 018563-004920US
Client Reference No.: AT00106.2

SYSTEM AND METHOD FOR POSITIONING TEETH

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Application No. 10/133,155 (Attorney Docket No. 18563-004910/AT-00106.1), filed April 26, 2002, now U.S. Patent No. 6,786,721, and was a continuation of U.S. Application No. 09/169,036 (Attorney Docket No. 18563-004900/AT00106), filed October 8, 1998, now U.S. Patent No. 6,450,807, the full disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] The present invention is related generally to the field of orthodontics, and more particularly to a system and a method for gradually repositioning teeth.

[0003] A fundamental objective in orthodontics is to realign a patient's teeth to positions where the teeth function optimally and aesthetically. Typically, appliances such as braces are applied to the teeth of the patient by a treating orthodontist. Each appliance exerts continual forces on the teeth which gradually urge the teeth toward their ideal positions. Over a period of time, the orthodontist adjusts the appliances to move the teeth toward their final destination.

[0004] The process of attaching the braces to teeth is tedious and painful. Additionally, each visit to the orthodontist is time consuming and expensive. The process is further complicated by uncertainties in determining a final arrangement for each tooth. Generally, the final tooth arrangement is determined by the treating orthodontist who writes a prescription. Traditionally, the prescription is based on the orthodontist's knowledge and expertise in selecting the intended final position of each tooth and without a precise calculation of forces being exerted on the teeth when they contact each other.

BRIEF SUMMARY OF THE INVENTION

[0005] The invention provides a method for fitting a set of upper and lower teeth in a masticatory system of a patient. The method generates a computer representation of the masticatory system of the patient; and determines an occlusion from the computer representation of the masticatory system.

Amendments to the Specification:

Please add the following new paragraph after paragraph **[0021]**:

[0021.1] FIG. 8 shows an exemplary process for fitting the ideal teeth.

Please replace paragraph **[0024]** with the following amended paragraph:

[0024] Referring now to FIG. 2A, the lower jaw 100 includes a plurality of teeth 102, for example. At least some of these teeth may be moved from an initial tooth arrangement to a final tooth arrangement. As a frame of reference describing how a tooth may be moved, an arbitrary centerline (CL) may be drawn through the tooth 102. With reference to this centerline (CL), each tooth may be moved in orthogonal directions represented by axes 104, 106, and 108 (where 104 is the centerline). The centerline may be rotated about the axis 108 (root angulation) and the axis 104 (torque) as indicated by arrows 110 and 112, respectively. Additionally, the tooth may be rotated about the centerline~~, as represented by an arrow 114~~. Thus, all possible free-form motions of the tooth can be performed.

Please replace paragraph **[0026]** with the following amended paragraph:

[0026] FIG. 2C shows one adjustment appliance 111 which is worn by the patient in order to achieve an incremental repositioning of individual teeth in the jaw as described generally above. The appliance is a polymeric shell having a teeth receiving cavity. This is described in U.S. Application Serial No. 09/169,276, filed October 8, 1998, now abandoned which claims priority from U.S. Patent No. 5,975,893, which in turn claims priority from provisional application number 60/050,352, ~~06/050,352,~~ filed June 20, 1997 (collectively the "prior applications"), the full disclosures of which are incorporated by reference.

Please replace paragraph **[0029]** with the following amended paragraph:

[0029] The polymeric appliance 111 of FIG. 2C may be formed from a thin sheet of a suitable elastomeric polymer, such as Tru-Tain 0.03 in, thermal forming dental material,